

Appl. No. 09/966,180
Amdt. dated October 12, 2005
Reply to Office action of August 9, 2005

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1.-2. (Cancelled).
3. (Currently amended) A method comprising:
requesting permission by a server in a rack mounted server system to
allocate power from a central power supply;
analyzing power requirements of the server requesting allocation against a
capability of the central power supply; and
powering the server if power is available from the central power supply
~~The method of allocating power as defined in claim 2 wherein the~~
~~operating condition is having a~~ to maintain fully redundant capability
from the central power supply.
4. (Cancelled).
5. (Currently amended) The method of allocating power as defined in claim ~~[[1]]~~ 3 wherein requesting permission further comprises:
sending a request by the server to the central power supply across a
primary communication pathway; and
responding by the central power supply across the communication
pathway.
6. (Original) The method of allocating power as defined in claim 5 wherein
sending the request and responcing across a communication pathway further
comprises sending the request and responding across a serial communication
pathway.

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7. (Original) The method of allocating power as defined in claim 6 wherein sending the request and responding across a serial communication pathway further comprises sending the request and responding across an RS-485 serial communication pathway.

8. (Original) The method of allocating power as defined in claim 5 wherein requesting permission further comprises:

- sending the request by the server across a first communication pathway to a chassis communication module;
- relaying the request by the chassis communication module to a power supply communication module across the primary communication pathway;
- polling individual power supplies in the central power supply to determine available power capacity;
- responding by the power supply communication module with a response being one of permission granted and permission denied to allocate power.

9. (Cancelled).

10. (Currently amended) A power management system for allocating power in a rack-mounted server system having a server mounted therein, the rack-mounted server system also having a power supply system apart from the server, the server coupled to the power supply system, the power management system comprising:

- a chassis communication module;
- a power supply communication module;
- a first communication pathway coupling the chassis communication module and the power supply communication module;
- a second communication pathway coupling the a server to the chassis communication module;

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a third communication pathway coupling ~~the~~ a power supply system to the power supply communication module;
wherein the server ~~is adapted to send~~ sends a request for permission to allocate power from the power supply system across the second communication pathway to the chassis communication module;
wherein the chassis communication module ~~is adapted to relay~~ relays the request for permission to the power supply communication module across the first communication pathway; and
wherein the power supply communication module ~~is adapted to poll~~ polls the power supply system across the third communication pathway, receives results of that polling across the third communication pathway, and sends a response to the server across the first communication pathway, the response being one of permission granted or permission denied.

11. (Currently amended) The power management system as defined in claim 10 wherein the chassis communication module further comprises:

a random access memory array (RAM);
a read only memory (ROM);
a microcontroller coupled to the RAM and ROM, the microcontroller ~~adapted to execute~~ executes programs stored on the ROM;
said microcontroller coupled to both the first and second communication pathways;
wherein the microcontroller ~~is adapted to receive~~ receives the request for permission from the server across the second communication pathway and transmits that request for permission across the first communication pathway to the power supply communication module; and
wherein the microcontroller ~~is further adapted to receive~~ receives the response across the first communication pathway from the power

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supply communication module and ~~to-directs~~ that response across
the second communication pathway to the server.

12. (Currently amended) The power management system as defined in
claim 10 wherein the power supply communication module further comprises:

a random access memory array (RAM);

a read only memory (ROM);

a microcontroller coupled to the RAM and ROM, the
microcontroller ~~adapted to execute~~ executes programs stored on
the ROM;

said microcontroller coupled to both the first and third communication
pathways;

wherein the microcontroller ~~is adapted to receive~~ receives the request for
permission across the first communication pathway, and in
response to the received request for permission, ~~to poll~~ polls the
power supply system across the second communication pathway;
and

wherein the microcontroller ~~is further adapted to receive~~ receives results of
the polling from the power supply system across the third
communication pathway, and transmits the response to the server
across the first communication pathway.

13. (Original) The power management system as defined in claim 10 wherein
the first communication pathway further comprises a serial communication
pathway.

14. (Original) The power management system as defined in claim 13 wherein
the serial communication pathway further comprises an Institute for Electrical and
Electronic Engineers (IEEE) RS-485 serial communication pathway.

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15. (Original) The power management system as defined in claim 10 where the second communication pathway further comprises a serial communication pathway.

16. (Original) The power management system as defined in claim 15 wherein the second communication pathway further comprises an I²C bus.

17. (Original) The power management system as defined in claim 10 wherein the third communication pathway further comprises a serial communication pathway.

18. (Original) The power management system as defined in claim 17 wherein the third communication pathway further comprises an I²C bus.

19.-27. (Cancelled).

28. (Currently amended) A rack mounted computer system comprising:
a plurality of computers mounted in the rack mounted computer system;
a central power supply system mounted in the rack mounted computer
system, the central power supply system coupled to and supplying
power to the plurality of computers;
a first communication pathway coupled between the plurality of computers
and the central power supply system;
wherein each of the plurality of computers requests permission across the
first communication pathway to draw power from the central power
supply system, and wherein a response to the request for
permission is sent across the first communication pathway, the
response based on an available power capacity of the central
power supply system.

~~The rack mounted computer system as defined in claim 24 further comprising:~~

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said central power supply system comprising a plurality of individual power supplies;
a power supply communication module coupled to each individual power supply through a third communication pathway;
said power supply communication module generating the response to the request for permission to draw power by polling each individual power supply across the third communication pathway to determine remaining power capacity of the central power supply system, the power supply communication module sending the response across the first communication pathway.

29. (Original) The rack mounted computer system as defined in claim 28 further comprising:

a chassis housing the plurality of computers, the chassis mounted in the rack mounted system;
a chassis communication module coupled to the first communication pathway, the chassis communication module also coupled to the plurality of computers by way of a second communication pathway;
and
wherein the plurality of computers request permission to draw power from the central power supply system by sending that request to the chassis communication module across the second communication pathway; and
wherein the chassis communication module forwards each request for permission to draw power across the first communication pathway to the central power supply system.

30. (Original) The rack mounted computer system as defined in claim 29 wherein the first communication pathway further comprises a serial communication pathway.

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31. (Original) The rack mounted computer system as defined in claim 30 wherein the serial communication pathway further comprises an RS-485 serial bus.

32. (Original) The rack mounted computer system as defined in claim 29 wherein the second and third communication pathways further comprise serial communication pathways.

33. (Original) The rack mounted computer system as defined in claim 32 wherein each of the second and third serial communication pathways further comprise an I²C bus.

34. (Currently amended) A rack mounted computer system comprising:
a plurality of computers mounted in the rack mounted computer system;
a central power supply system mounted in the rack mounted computer system, the central power supply system coupled to and supplying power to the plurality of computers;
a first communication pathway coupled between the plurality of computers and the central power supply system;~~The rack-mounted computer system as defined in claim 24 further comprising:~~
a power supply communication module coupled to the plurality of computers across the first communication pathway, the power supply communication module also coupled to the central power supply system across a ~~third~~second communication pathway;
said central power supply further comprises:
a plurality of individual power supplies, each individual power supply having a health and status monitoring device associated therewith, each health and status monitoring device ~~adapted to monitor~~monitors an operating condition of its associated individual power supply; and

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wherein each of said health and status monitoring devices communicates the operating condition of its associated individual power supply to the power supply communication module across the second communication pathway;

wherein the power supply communication module requests a non-critical computer of the plurality of computers to shut down when a health and status monitoring device indicates a change in the operating condition of its associated individual power supply.

35. (Original) The rack mounted computer system as defined in claim 34 wherein the power supply communication module requests the non-critical computer of the plurality of computers to shut down when a first health and status monitoring device for a first individual power supply indicates a failure of the first individual power supply.

36.-41. (Cancelled).

42. (Currently amended) A rack mounted computer system comprising:
a plurality of computer means mounted in the rack mounted computer system;
a central means for supplying power to the plurality of computer means;
the central means for supplying mounted in the rack mounted computer system;
a first means for facilitating message transfer between the plurality of computer means and the central means for supplying;
wherein each of the plurality of computer means requests permission across the first means for facilitating to draw power from the central means for supplying; and

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wherein a response to the request for permission is sent across the first means for facilitating; the response based on an available power capacity of the central means for supplying. The rack-mounted computer system as defined in claim 38 further comprising:

said central power supply means for supplying comprising a plurality of individual power supplies supply means;

a power supply communication means for communicating with a power supply facilitating message transfer that transfers messages to the central power supply means for supplying, the power supply communication means for communicating coupled to each individual power supply means through a third communication means for facilitating message transfer;

said power supply communication means for communicating generating the response to the request for permission to draw power by polling each individual power supply means across the third communication means for facilitating to determine remaining power capacity of the central power supply means for supplying, the power supply communication means for communicating sending the response across the first communication means for facilitating.

43. (Currently amended) The rack mounted computer system as defined in claim 42 further comprising:

a chassis means for housing the plurality of computers computer means,
 the chassis means for housing in the rack mounted system;

a chassis communication means for computer communication for facilitating message that transfers messages from the plurality of computers computer means, the chassis communication means for computer communication coupled to the first communication means for facilitating, the chassis communication means for computer communication also coupled to the plurality of computers computer

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means by way of a second communication means for facilitating message transfer; and

wherein each of the plurality of ~~computers~~ computer means requests permission to draw power from the central power supply means for supplying by sending those requests to the chassis communication means for computer communication across the second communication means for facilitating; and

wherein the ~~chassis communication means~~ for computer communication forwards each request for permission to draw power across the first ~~communication means~~ for facilitating to the central power supply means for supplying

44.-47. (Cancelled).

48. (Currently amended) A rack mounted computer system comprising:
a plurality of computer means mounted in the rack mounted computer system;
a central means for supplying power to the plurality of computer means, the central means for supplying mounted in the rack mounted computer system;
a first means for facilitating message transfer between the plurality of computer means and the central means for supplying; ~~The rack mounted computer system as defined in claim 38 further comprising:~~
a power supply communication means for communicating with a power supply facilitating message transfer from the plurality of computers to the power supply means for supplying power, the power supply communication means for communicating coupled to the plurality of computer means across the first communication means for facilitating, the power supply communication means for communicating also coupled to the central power supply means for

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supplying power across a third communication second means for facilitating;

said central power means for supplying power further comprises:

a plurality of individual power ~~supplies~~ supply means, each individual power supply means having a means for health and status monitoring means for monitoring an operating condition of each individual power supply means and

wherein each of said means for monitoring health and status monitoring means communicates the operating condition of its associated individual power supply means to the ~~power supply communication means for communicating~~ across the second communication means;

wherein the ~~power supply communication means for communicating~~ requests a non-critical computer means of the plurality of ~~computers~~ computer means to shut down when a ~~health and status monitoring means for monitoring~~ indicates a change in the operating condition of its associated individual power supply means.

49. (Currently amended) The rack mounted computer system as defined in claim 48 wherein the ~~power supply communication means for communicating~~ requests the non-critical computer of the plurality of computers to shut down when a ~~first health and status monitoring means means for monitoring~~ for a first individual power supply indicates a failure of the first individual power supply.

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50. (Currently amended) The method of allocating power in a rack mounted server system as defined in claim ~~[[1]]~~ 3 wherein requesting permission by the server to allocate power further from the central power supply further comprises:

 sending a request to allocate power; and
 sending a number representing an amount of power requested.

51. (Previously presented) The method of allocating power in a rack mounted server system as defined in claim 50 further comprising:

 querying a read only memory device within the server to obtain the number representing an amount of power requested; and
 sending the number representing an amount of power requested to the central power supply across a primary communication pathway.

52. (Previously presented) The power management system as defined in claim 10 wherein the server is further configured to send a number representing an amount of power needed along with the request for permission.

53. (Currently amended) The power management system as defined in claim 52 further comprising:

 a read only memory device mounted in the server, the read only memory device storing the number representing an amount of power needed; and

 wherein the server is ~~adapted to obtain~~ obtains the number representing an amount of power needed by accessing the read only memory device.

54. (Previously presented) The power management system as defined in claim 53 wherein the read only memory device further comprises an electrically erasable programmable read only memory.

55.-61. (Cancelled).

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62. (Currently amended) A method of ~~de-allocating power to a server in a rack mounted server system, the server powered by a central power supply apart from the server, the method of de-allocation comprising:~~

- a) ~~operating the a server~~ in a high power consumption state;
- b) ~~sending a message to the a central power supply indicating a release of power of power by the server; and~~
- c) ~~transitioning the server to a low power state.~~

63. (Previously presented) The method of de-allocating power as defined in claim 62 wherein transitioning the server to a low power state further comprises transitioning the server from an operational state to a sleep state.

64. (Previously presented) The method of de-allocating power as defined in claim 62 wherein transitioning the server to a lower power state further comprises transitioning the server from an operational state to a powered off state.

65. (Previously presented) The method of de-allocating power as defined in claim 62 wherein sending a message to the central power supply indicating a release of power of power by the server further comprises sending an indication of the amount of power released.

66. (Previously presented) The method of de-allocating power as defined in claim 65 wherein transitioning the server to a low power state further comprises transitioning the server from an operational state to a sleep state.